

Listing of Claims

This listing of claims replaces all previous listings of the claims.

1. (Previously presented) A method for detection of an analyte in a test sample comprising the steps of:

preparing a lanthanide ion-ligand complex by mixing a lanthanide ion and a ligand, wherein the lanthanide ion is selected from the group consisting of neodymium (III) ion, ytterbium (III) ion (Yb^{3+}) and erbium (III) ion (Er^{3+}), and wherein said ligand comprises a sensitizing moiety, which absorbs light in the 400 –1000 nm region;

labeling a reactant or immunoreactant with the lanthanide ion-ligand complex by contacting the reactant or immunoreactant with the lanthanide ion-ligand complex to form a labeled reactant or immunoreactant;

mixing an analyte, a specific binding partner for the analyte, and the labeled reactant or immunoreactant to form a mixture, whereby the analyte will bind with the specific binding partner for the analyte and with the reactant or immunoreactant;

irradiating the mixture with light having a wavelength ranging from 400 nm to 1000 nm;

measuring an emitted luminescence from said mixture; and

detecting the analyte using said luminescence measurement.

2. (Previously presented) The method as claimed in claim 1, wherein the lanthanide ion is selected from the group consisting of neodymium (III) ion (Nd^{3+}) and ytterbium (III) (Yb^{3+}).

3. (Currently amended) The method as claimed in any one of claims 1, 2, 10 and 11, wherein the sensitizing moiety is selected from the group consisting of fluorescein derivatives; triphenylmethane derivatives; porphyrin derivatives; rhodamine derivatives; phenothiazine derivatives; phenoxazine derivatives; coumarin derivatives; acridin derivatives; thio-indigo derivatives; indigo derivatives; carbocyanine derivatives; squaraine derivatives; ~~and~~ naphthalocyanine derivatives; and phthalocyanine derivatives.

4. (Currently amended) The method as claimed in any one of claims 1 and 10, wherein the ligand is a composition which comprises, as one of its constituents, a compound which comprises an element selected from the group consisting of oxygen, nitrogen, phosphorous, and sulfur moieties which ~~can complex~~ complexes with Nd (III), Yb (III), or Er (III) ions, and the sensitizing moiety is selected from the group consisting of fluorescein derivatives; triphenylmethane derivatives; porphyrin derivatives; rhodamine derivatives; phenothiazine derivatives; phenoxazine derivatives; coumarin derivatives; acridin derivatives; thio-indigo derivatives; indigo derivatives; carbocyanine derivatives; squaraine derivatives; naphthalocyanine derivatives and; phthalocyanine derivatives.

5. (Previously presented) A kit for detection of an analyte in a test sample comprising
a specific binding partner for the analyte;
a reactant or immunoreactant; and
a label wherein the label is a lanthanide ion-ligand complex formed by contacting a lanthanide ion and a ligand, wherein the lanthanide ion is selected from the group consisting of neodymium(III) ion (Nd^{3+}), ytterbium(III) ion (Yb^{3+}), and erbium(III) ion (Er^{3+}), and wherein the ligand comprises a sensitizing moiety which absorbs light in the 400-1000 nm region.

6. (Currently amended) An apparatus for detection of an analyte in a test sample comprising:
the kit of claims 5, 12, 13 or 14;
a light source in the 400-1000 nm wavelength range; and
a detector, ~~which detects~~ for detection of luminescence in the 800-1600 nm range.

7. (Previously presented) The method of claim 4, wherein the compound is selected from the group consisting of polyaminocarboxylic acid, pyridine dicarboxylic acid, and a derivative thereof.

8. (Previously presented) The kit of claim 5, 12, 13 or 14, wherein the sensitizing moiety absorbs in the 400-800 nm region.

9. (Currently amended) The apparatus as claimed in claim 6, wherein the detector ~~can detect is a~~ detector for detection of luminescence in the 800-1100 nm range.

10. (Currently amended) A method for detection of an analyte in a test sample comprising the steps of:

preparing a lanthanide ion-ligand complex by mixing a lanthanide ion and a ligand, wherein the lanthanide ion is selected from the group consisting of neodymium (III) ion, ytterbium (III) ion (Yb^{3+}) and erbium (III) ion (Er^{3+}), wherein the ligand ~~is in contact with~~ comprises a sensitizing moiety, which absorbs lights in the 400 –1000 nm region;

labeling a reactant or immunoreactant with said lanthanide ion-ligand complex by contacting the reactant or immunoreactant with the lanthanide ion-ligand complex to form a labeled reactant or immunoreactant.

mixing the analyte, a specific binding partner for the analyte and the labeled reactant or immunoreactant to form a mixture, whereby the analyte will bind with the specific binding partner for the analyte and with the reactant or immunoreactant;

irradiating the mixture with light having a wavelength ranging from 400 nm to 1000 nm;

measuring the emitted luminance from the mixture; and

detecting the analyte using said luminescence measurement.

11. (Previously presented) The method as claimed in claim 10, wherein the lanthanide ion is selected from the group consisting of neodymium (III) ion (Nd^{3+}) and ytterbium (III) ion (Yb^{3+}).

12. (Previously presented) A kit for detection of an analyte in a test sample comprising:

a specific binding partner for the analyte;

a reactant or immunoreactant; and

a label wherein the label is a lanthanide ion-ligand complex formed by contacting a lanthanide ion and a ligand, wherein the lanthanide ion is selected from the group consisting of neodymium (III) ion (Nd^{3+}), ytterbium (III) ion (Yb^{3+}), and erbium (III) ion (Er^{3+}), and wherein the ligand is in contact with a sensitizing moiety which absorbs light in the 400-1000 nm region.

13. (Previously presented) The kit as claimed in claim 5, wherein the specific binding partner and the reactant or immunoreactant are attached to a carrier.
14. (Previously presented) The kit as claimed in claim 12, wherein the specific binding partner and the reactant or immunoreactant are attached to a carrier.